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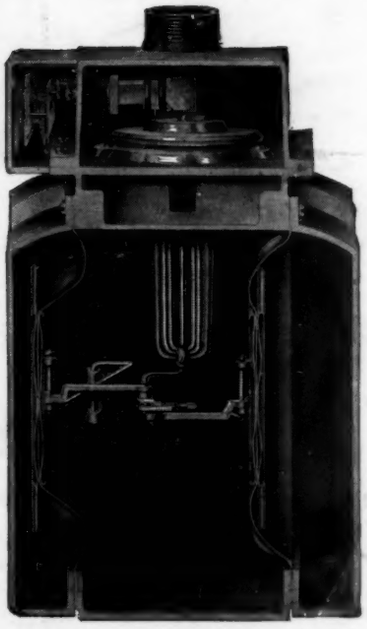
SPRAGUE



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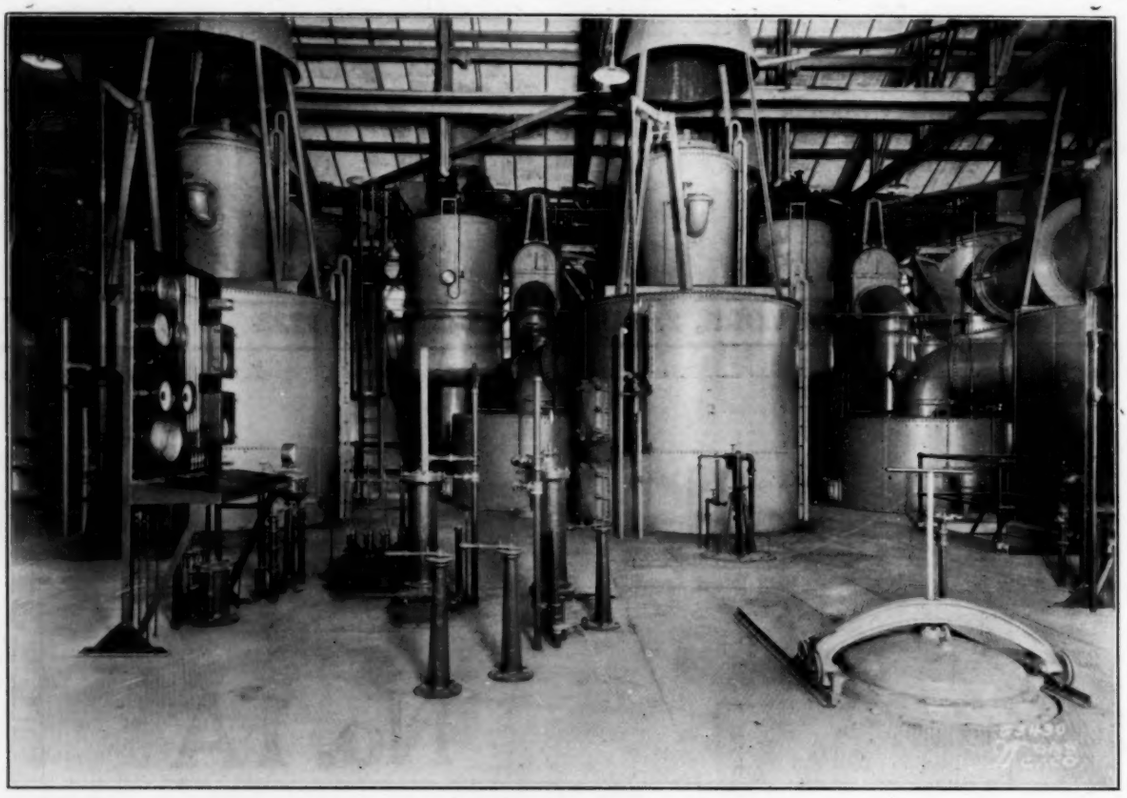

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American Gas Journal

SIXTY-THIRD YEAR

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Gas or Lignite, the Fuel of the Future?

INTERESTING DISCUSSION AT MEETING OF CHEMISTS' CLUB

What will be the fuel of the future? Shall it be gas, produced by the complete gasification process or lignite char? What shall be done with the new product, low temperature coal tar, a product new in gas manufacture? Shall coal be converted into gas by complete gasification processes and utilized as a general fuel or shall serious attempts be made to utilize the huge deposits of brown coal, lignite coal, amounting to more than one trillion tons?

These were the interesting problems that were discussed from various angles in the meeting of the American Section of the Society of Chemical Industry, which took place Friday evening, March 23, at the Chemists' Club in New York City. The program commenced appropriately with a paper on gas, continued with one of liquid coal tar and finished with one on solid lignite coal. Thus, all the phases of fuel were represented.

The address on the importance of gas as the fuel of the future was delivered by H. O. Loebell, vice-president of the Combustion Utilities Co. of New York City. Mr. Loebell's paper dealt with the general phases of the subject, no attempt being made to give a detailed description of a process which could produce gas under such conditions as to render it available for general use as a fuel. It was pointed out, however, that the complete gasification process is the one, which at the present time in the opinion of the lecturer possessed the technical and economic characteristics to render it available for such a purpose, that is, it was the only one which afforded possibilities of its future use as a means for manufacturing gas as a general fuel.

Mr. Loebell made a plea for the chemist and the chemical engineer to interest himself more enthusiastically and more extensively in this problem of solving the fuel question of the future. He aptly enough remarked that the fuel question to the man in the street has always meant that price that he had to pay for his fuel and only in recent years whether he could purchase the required fuel at any price, due to strikes and other production-destroying agencies. He might have considered for a moment the possibility or advisability of using oil or gas, but not very seriously. It is the problem of the scientist, the chemist, fuel engineer, the gas technologist and the gas industry to look far ahead in the future and prepare the way for the inevitable day, when coal will be supplanted as the common fuel. The fuel problem must be put on a permanent basis, was Mr. Loebell's message to the gas industry.

He made a short comparison to show that electricity, natural gas and fuel oil all possess certain inherent characteristics, attendant to their manufacture, source of supply, conditions of utilization, geographical location of the point of their production, economic conditions affecting price, that make their development into a general fuel, the permanent fuel of the future, very unlikely. There is left gas which can serve both industry and home in this manner, under the proper conditions.

Gas Is the Fuel of the Future

Gas is the only fuel which gives any real promise as being able to become the real, practical fuel of the future, usable for all purposes for which coal is used at the present time. Mr. Loebell brought out the significant fact that no matter what the fuel is, be it gas, fuel oil or coal, the process of combustion converts the combustible into the state of a gas and it is this gas that performs the actual heating operation. Each and every steam, hot air or hot water furnace, each and every heating or cooking stove is just a small gas producer, operating at an efficiency which is far below what can be and is attained in the gas plant.

In the household furnace one ton of coal will give an amount of heat which could be replaced by the combustion of enough gas to produce 15,000,000 units of heat. The gasification process within the furnace is only about 55 per cent efficient from the thermal standpoint, while the gasification process in the gas plant is from 80 to 85 per cent thermally efficient. The same conditions hold good when oil and every non-gaseous fuel is used in the furnace. It stands to reason, the speaker declared, that in time the more efficient process will replace the less efficient process.

The generation of gas at a central point by the complete gasification process, working at a thermal efficiency of 85 per cent or more, is the future aspect of the fuel problems. The gas will then be distributed and used in the household in the place of coal and oil. The complete gasification process produces by-products of value, among which is a coal tar,

which is quite different in properties than the ordinary coal tar or gas works tar. It may be used as a supplement to mineral oil, and may help solve the problem of motor fuel.

Mr. Loebell finished his discourse by declaring that it is only a question of time before gas will be used in the place of coal not only for cooking but for house-heating and industrial purposes as well. The solution of the problem will come in the future. How long before such a solution is reached depends to a large measure on the interest taken in it by technical men, chemists and engineers.

Discussion Followed Mr. Loebell's Paper

Quite an extensive discussion followed Mr. Loebell's paper. He was asked just what kind of coal, that is containing how much ash at a maximum, could be used in the complete gasification process, and answered that coal up to 40 per cent ash was generally considered as a maximum high ash coal for this purpose. Professor Ralph H. McKee, of Columbia University,, the chairman of the meeting, remarked that he knew of two cases in which a producer gas of medium quality was produced from a coal containing as much as 80 per cent ash. When asked about the yield of tar in the complete gasification process, Mr. Loebell answered that it was about 20 gallons per ton of coal carbonized.

Properties of Low Temperature Tar Discussed

The next speaker was Professor Jerome J. Morgan, M.S., Ph.D., of the chemical engineering department of Columbia University. Dr. Morgan described the results of an investigation, which was carried out under his direction, to determine the characteristics of low temperature tar, made in accordance with the carbocoal process. It was brought out that carbocoal tar is quite different from ordinary high temperature tar and that the various fraction obtained in its distillation were also much different in properties than those obtained from high temperature tars. The pitch that was obtained in the low temperature tar distillation had a much lower melting point and a lower free carbon content than that obtained from the high temperature tars. The tar acids, constituting over 40 per cent of the distillate of carbocoal tar, are mainly alkalated and hydrogenated derivatives, of the familiar phenols of high temperature tar. The neutral oils contain no aromatics and only a small proportion of paraffines. The bulk of the neutral oils is made up of ring hydrocarbons with numerous side chains and more hydrogen in the ring than the aromatic hydrocarbons. The percentage of phenolic bodies in the carbocoal tar is comparatively high. The lecturer pointed out that it was a difficult matter to foretell just what the properties of the tar, obtained from the complete gasification process, will be.

Interesting Discussion Follows

In the discussion, which followed the address, it was brought out that the application of this tar to practical purposes has not yet been worked out on a commercial basis. In fact it would seem as if it was not at all clearly understood just what the nature of these uses would be. The chemist will find a great opportunity here for the exercise of his talents and his ingenuity is finding uses for this substance and for the many different products that can be derived from it. From the fact that carbocoal, low temperature tar, contains a comparatively large proportion phenolic bodies, it may be inferred that the crude tar or the fraction, containing these phenolic bodies, could be utilized to good advantage for the purposes for which phenols and phenolic compositions are generally used, such as the manufacture of germicides, disinfectants, sheep dips, etc.

Lignite Coal an Important Factor in the Fuel Problem

The last speaker of the evening, A. C. Fieldner, Superintendent and Supervising Chemist, Pittsburgh Experiment Station, United States Bureau of Mines, had for his subject the carbonization and utilization of lignite. The Government has been paying considerable attention lately to the use of lignite as fuel. The large quantities of this combustible available in this country may be of potential importance in this connection. Mr. Fieldner's paper dealt with the character of the lignite coals, their distribution over the country, comparison of these coals with the German braunkohle, which is utilized to a considerable extent in Germany today and which has given excellent results wherever and for whatever purpose it was used.

Lignite Char

Experiments were made with North Dakota lignite coal, which was carbonized in a vertical carbonizing oven made of brick. After charring, a product was obtained of uniform gray black color at a yield of 40 per cent. The large sized char was used as a fuel; it is a very fine fuel, free-burning and can be used industrially on cox stokers and for domestic purposes, according to the speaker. The smaller sizes were briquetted with flour and pitch, the briquettes containing 86.5 per cent char, 1.5 per cent flour, 5 per cent moisture and 7 per cent pitch. This product was burned on a brass burner stove, equipped with a specially designed grate for burning lignite char. The grate was made in the form of a cone, pierced with many perforations. Excellent results were obtained, it was claimed. The char ingites easily and burned readily at rates not exceedingly 4.0 pounds of fuel per square foot of grate surface. The grate was shaken at two hours' intervals and the fire required very little attention. Banking of the fire was readily accomplished. The fire was banked at 3:30 in the afternoon and the dampers were opened again in the morning at 8:30 A. M. Within fifteen minutes after the opening of the dampers the fire was burning brightly again.

Similarly excellent results were obtained by burning the char in an ordinary kitchen stove.

Factors and Grading of Gas Service*

HOW ILLINOIS COMMERCE COMMISSION ATTACKS REGULATION PROBLEMS

By J. Howard Mathews, Illinois Commerce Commission

Evolution of Service

Some years ago a great deal was being said about the "gouging public utilities." Lately we have heard a great deal about improving the public's confidence. We hope soon to hear public utility representatives everywhere telling how they have managed to secure the good will and full confidence of the public. That change in attitude marks the evolution of present day service and symbolizes the progress that is being made.

Why Good Service

You have heard, and heard it repeatedly, that good service is the basis of your prosperity. That ought to be incentive enough. You have heard also that you can obtain and hold the public's good will only by rendering good service. But what benefit is good will? Does good will pay interest on bonds? It is more convenient and pleasant, but does it mean anything financially to have your people sanction something you want and need and which you think the regulatory commission is going to give you anyway?

Some representatives of the old school say: "What do we care? We have a monopoly of the business." But don't forget that the public is the judge of your service. When you want increased rates, franchise privileges, rights-of-way, or if you want your community to overlook for a time some poor service or poor construction, it is mighty good business to have the public feeling the same way about it you do. How much in dollars and cents would it mean to you to settle quietly across the table some petty grievance with a customer without dragging the commission, city or the courts into it, and without enlisting your draftsmen, clerks, superintendents and engineers and hiring lawyers to answer and contest the complaint?

What Is Service?

Service in the broadest sense of the term does not end with good quality and good pressure. Neither does it begin there. You began to serve your community when first you built a plant that was a credit to the town and when you set up an office that prospective consumers felt like visiting. You are serving your people in dozens of ways that never occurred to the executive five or ten years ago. You are serving your consumers in at least twenty ways that I intend to tell about. I shall later name these twenty factors of service, tell what we think of their relative importance and how we endeavor to find out how well they are being carried out.

That service covers more than pressure and heating value is not always realized. An analysis of the records of any utility or of any regulatory body, however, will show almost every conceivable objection to the service. Criticisms are made of the equipment, methods of operation, kind of treatment accorded consumers, extension policies, accuracy of meters and many other features which are sometimes lost sight of in considering service. In the broad sense, service really means treatment accorded consumers and every factor that enters into that treatment.

Factors of Service

In every move a utility makes, in everything it does where the public is concerned, there is a service done or omitted. From the time a prospective consumer first interviews a utility representative about securing service until his service is discontinued and final bill paid, the utility's sole obligation to him is service. For a given quantity of gas he pays directly on a metered basis along with his neighbors, but he is entitled also to a good quality of gas and good pressure, to information courteously given, and to a careful consideration of complaints.

More specifically, the important factors that enter into the furnishing of gas and which are given consideration in our grading system are:

1. Pressure (including continuity)
2. Heating value
3. Handling of complaints
4. Purity
5. Adjustment of appliances
6. Construction and maintenance
7. Adequacy of capacity
8. Provisions for emergency
9. Adjustment of bills
10. Billing
11. Extension policy
12. Promptness in furnishing new service
13. Courtesy of utility representatives
14. Testing of service and keeping of records
15. Accuracy of meters

A paper on gas service could very well cover the field from the plant to the point of utilization on the consumer's premises. It could begin by emphasizing the necessity of maintaining a uniform quality, could discuss the proper fixing, condensing, purifying and delivery to the appliance. It could discuss heating value standards or explain how improper

*Paper presented at annual convention of Illinois Gas Association.

air mixture at the burner is often confused with low heating value. I believe, however, that such a field has been very well covered. It has occurred to me that it might be more interesting to begin where the others have left off,—admitting that proper pressure and a satisfactory quality of gas should be furnished and outline a grading system which gives consideration to all service deficiencies and which rates your service lower than your neighbor's when some of those things are not done which we are all willing to admit should be done. Instead of commenting on the value of good service, I will therefore accept your admission that it should be good and will explain how we arrive at a grade of 98 per cent for pressure, for instance, when your neighbor gets 35 per cent, and how your final grade, taking into consideration all factors of service may be 96 per cent, as against 54 per cent for the next town.

Satisfying the Public

Since we take into consideration the attitude of consumers in grading service, I believe it would be pardonable at this point to dwell for a moment on some of the elements contributing to the formulation of public opinion.

There was a time when the public entertained little hope of getting a square deal from the public utility. There are still some public utility officials who think it is the undisputed right of the public utility to show indifference toward the public rather than to accommodate it, and there are still a lot of patrons who enjoy negotiations with public utility representatives about as much as most of us enjoy having a tooth pulled. Some public utility's officials at one time made use of their business advantages to even up personal grudges and satisfy political motives. The public had to take what it could get. The public has not yet forgotten these things, and you will have to do some efficient salesmanship work if you want to change that attitude.

Handling of Complaints

One of the quickest ways of getting results is by handling complaints properly, as that contributes surprisingly to the molding of public opinion. Many a competitive system in the public utility business can be traced directly to the utility's failure to properly cope with some situations originally arising through complaint against the service. A consumer may have occasion but once to make an inquiry or register a complaint. To his mind his case stands out as an unusual circumstance, meriting individual attention. To him it is a real grievance, and he may consider it an insult to his intelligence if it is not treated as such. His opinion of the entire organization will be influenced by the treatment accorded him in that experience and the amount of individuality the utility's representative injects into his case. The company makes a friend or an enemy, perhaps an army of them, in that one deal. To the complaint clerk the case is not different from a dozen others he has handled on the same day. To him it lacks individuality, and unless he is particularly adapted to the work and continuously on his guard, he may treat the complainant indifferently, perhaps discourteously, and will dispose of the complaint in a perfunctory manner. Count that a lost opportunity to favorably advertise. If a part of an organization smiles at a man he smiles back at the organization. You can't handle a man as a package of merchandise and expect him to boost your company.

Fitness of Personnel

Some people are like porcupines. No matter what your angle of approach, you suffer an injury. You cannot afford to have a complaint clerk like that. Indeed, you cannot afford to have such an individual in any position where he meets the public. If you can't transform him, transfer him. A complaint man with the right qualifications can make most of the dissatisfied consumers feel that they have been given every courtesy and consideration and can put them in such a frame of mind that they will be satisfied with the treatment accorded them. Politeness and courtesy are to public utilities what pneumatic tires are to a car. They make the going much easier. A grouchy or discourteous employee is a flat tire—he needs changing; he's about as necessary as an overdrawn bank account. Select all your employees with an eye for adaptability and affability.

By disfiguring lawn and shrubs, breaking a vase now and then, leaving tracks in the kitchen, or failing to clean up after a piece of work, a construction man or fitter can offset all the good work your publicity man can accomplish, and probably outdo him a little. One case of poor pressure can offset $500 worth of advertising for new business. A flippant look at a pretty kitchen maid may start a cyclone.

Information to Consumers

In spite of progress of recent years, many a man of the street still retains the notion that the public utility business was organized to "skin" the public; that the management intends to get all it can and give as little as it has to; that the only way he can get his deserts is by carrying on hostilities with the organization, remonstrating against all charges, contesting license privileges, agitating competition and municipal or government control, and in every other way making it hard for the company to live and progress. What this man needs is some information about how the business is regulated by the state commission, what it costs to run the utility, what its particular operating or financial troubles are, where the money goes, how much money is necessary to furnish adequate service, and that new money must be secured for additions and betterments.

Giving this information is part of your service. Make a careful study of your consumers; know them, cultivate their good will, know their needs and gain their confidence. Convince them that your service is of high and useful character and "deliver the goods." Don't forget this: You can get just about anything you need from the people you serve if you have been giving them everything they are entitled to and giving it to them in the proper way.

But you may say, "it cannot be done with the class of people we serve." Before you come too

positively to this conclusion, analyze your business and find out whether you are convincing your consumers of your integrity and sincerity of purpose. Find out whether your employees understand the value of proper public relations, are fitted to the position they hold and loyal to their organization. When a consumer or prospective consumer visits your office, does he go out saying of the clerk, "he is a mighty fine fellow," and is he shown individuality when he pays a bill?

We had a complaint not so long ago from which we made out the complainant's idea of water gas to be about as follows: The company makes the gas out of God's free water, shoots in a little of God's free air, and tries to sell the product to free people of a free country at a price that the devil himself wouldn't have the nerve to charge. This man is entitled to more information and everybody would be better satisfied and things would run more smoothly if he had it. Show him that in addition to water and air there are needed coke or coal, oil, labor, supervision, investment, and that the use of equipment involves wear and tear.

Make the best of your publicity. It has been said that after doing a good thing the next best thing is letting the public know that you are doing a good thing. Explain to the people that where they are sure there is air in the gas it is more likely because the appliance is not properly adjusted, a matter which can easily be remedied. If your gas user does not know this he may be doing your company harm every day. Poor pressure may be caused by a stopped service which the company could not be expected to know about unless the consumer called attention to it. Teach your consumers to discuss deficiencies in service with you and make them feel that their inquiries or objections are well received and worth while. Study your records and complaints to find out what is wrong with your service, plant organization, or the spirit of your personnel that objectionable situations are allowed to occur or be repeated. Then see to it that the necessary improvements following these studies are carried out.

Keep Your Facilities Sightly

If you expect support from the public and a good attitude on its part, you must keep your facilities in a good state of repair. A friend and I were recently driving by a gas holder. We noticed that for ballast on top of the tank the company had old barrels, pieces of an old plow, some boxes of dirt on which weeds were growing, and part of an old buggy top. One pound of an old plow is just as heavy, of course, as one pound in any other form of avoirdupois, but my friend expressed himself as feeling that the use of such debris for this purpose is an indication of lack of business methods. If the housekeeping and arrangement of your offices and shops are beyond criticism, the citizens will think that your financial condition and whole business are in the same clean-cut condition and well managed.

Records, Tests, Surveys, Etc.

There are a large number of matters not directly affecting the consumers which, in our opinion, are of vital importance in the proper conduct of a public utility business. Records, tests and surveys, upon which establishment of adequate service is based, are matters which the utility cannot afford to neglect. It seems always that the utility which is short of records is also deficient in service. A study of records conscientiously and accurately kept never fails to reveal conditions of service which merit attention. A recurrence of conditions shown by such records will impress the management with the necessity of giving attention to them.

It may be that some representatives who have a hobby of developing forms and creating, rather than eliminating, office routine will be burdening the utility with many excess and perhaps duplicate records. The reverse, however, is generally true and it is safe to say that by far the larger portion of public utilities suffer from lack of records rather than from a superfluity.

Grading the Service

The grading of gas service has, we believe, now become such a well-established institution with us in Illinois that it is not necessary to spend much time justifying it. It gives a much more accurate and concrete idea of the extent of violations of service requirements than would a mere statement that some of the Commission's rules have been violated. The question which concerns both of us is the importance of the rule violated and the extent to which it is violated. Unsatisfactory gas pressure constitutes a violation of one rule, as does a failure to properly enter information taken in connection with a meter test. Obviously, the importance of the first far outweighs the other. Actual conditions of service are manifestly more important than are the records indicating the conditions of service, and yet the violation of a rule may appear in either.

We used to say, "that company's service is fair and we think it is better in some ways and worse in others than service some place else," but we could not say which on the whole was better. Now we can tell how one service compares in heating value and in all other particulars with another and how they compare in the final analysis after consideration has been given to all factors and the importance of each. In our grading of service we have been giving concrete consideration to such matters as handling complaints, courtesy of employees, creating the proper public attitude, keeping facilities sightly and well maintained. In our opinion these are factors of service just as surely as pressure and quality are and you cannot possibly get a good grade with us by neglecting these, no matter how nearly 100 per cent you are in some of the more generally recognized factors of service.

How Grade Is Determined

The plan as developed and shown hereinafter in detail shows at a glance the degree of perfection attained in each phase of service. This is done by giving a specific grade on the basis of 100 per cent for each element of service. To take care of the relatively greater importance of one over the other, the grade as assigned by the engineer is multiplied by a fixed weight, the value of which depends on

the importance of the factor. For instance, a constant of 30 is used where pressure is graded, whereas 1 is used where information on bills is concerned. The total of the weights is 100. The various grades are multiplied by the respective constants, the products added and the final result so obtained divided by 100 to give the final grade of service. This final grade then takes into consideration the grades and relative importance of each of about twenty factors. The following form used in grading is printed on the back of the service inspection sheet and the grades are assigned by the engineer making the inspection, subject, of course, to review in the office. For the purpose of illustration, grades have been assigned and final grade computed. I have purposely selected relatively high grades for all factors except pressure, heating value and handling of complaints in order to show how low grades for these more important factors cause a low final grade:

Condition of Service	Weight	Grade	Weighted Score
Pressure (including interruptions)	30	35	1050
Heating value	15	50	750
Handling of complaints	10	60	600
Meter testing	7	98	686
Purity	5	95	475
Consumer's attitude	4	80	320
Construction & maintenance	2	90	180
Adequacy of capacity	2	100	200
Provisions for emergency	2	95	190
Adjustment of bills	1	100	100
Billing	1	100	100
Extension policy	1	100	100
Furnishing new service	1	90	90
Total of Service Weights.	81		
Records			
Pressure Surveys & Records	5	90	450
Record of complaints	4	100	400
Record of heating value	3	90	270
Record of purity	2	100	200
Record of meter tests	2	100	200
Record of meters	2	100	200
Record of interruptions	1	100	100
Total of Record Weights.	19		
Final Grade			66.61

Advantages of Grading

From the point of view at our office, the plan provides a concrete, brief method of showing by a few figures what an engineer could not show in a voluminous report. It shows at a glance what particular features of service are satisfactory and the extent to which others are unsatisfactory. The grading of any property tells a complete and interesting story.

The greatest advantage of the system is that it has had the effect of instilling into utilities and their representatives a spirit of competition in the matter of rendering satisfactory service to the public. Under its operation, different utilities compete with each other. Different divisions of the same utility and different communities of the same division endeavor to stand higher than their neighboring division or community. The system has served to impress upon utilities the importance of such factors as properly handling complaints and creating good public relations, which were not given enough thought before. It has made a concrete and tangible objective out of the problem of "selling the company" to the community it serves, whereas this had previously seemed to so many employees as something of little practical significance.

We use the system also in determining the frequency of inspection, it being our opinion that the towns which grade lowest should be given the most frequent inspections. Our periods vary from 6 to 12 months, depending upon the character of service rendered as reflected in the grade.

Effect of Poor Records

The question might be raised whether the keeping of very complete records would not in some cases have a tendency to lower the grade. In practice it doesn't seem to work out that way. Complaints and interviews usually bring to light some unsatisfactory service conditions, if any exist. If the inspectors have any occasion to question records or if records are unsatisfactory, they make some surveys of their own. Studies of the distribution system are made and tests are made at points where poor service is likely to be in evidence. Furthermore, the instructions call for certain deductions when the company does not have sufficient records to prove the actual conditions, this being on the theory that conditions are likely to be worse than revealed by meagre records. In addition, there is, of course, a deduction for failure to keep proper records. The total deduction may affect the final grade as much as 8 per cent, with the result that the company having poor records has very little chance of standing at the top of the list.

Classification of Towns for Comparative Purposes

In order that all towns may have as nearly as possible an equal opportunity to stand at the head of the list, we are arranging to classify the gas properties into four classes, A, B, C and D. In this classification we take into consideration a large number of factors, such as output, number of consumers, character of community, whether served from a transmission line, etc. Whereas it would be discouraging for small isolated plants to attempt to compete with large properties, they may be able to stand at the top of the particular class into which they fall.

Examples of Grading

In order to give a more concrete idea of how we arrive at a specific grade, I have selected and graded a few service conditions:

Assume the following records of heating value:

	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.
Maximum	590	605	570	560	595	602
Minimum	540	520	500	521	542	539
Difference	50	85	70	39	53	63
Monthly av'ge..	569	570	559	551	561	536

Average variation for six months 60 B. T. U.

(deduct 1% for each 6 B. T. U. variation).. 10%
Below standard (deduct ½% for each B. T. U. below standard):
November, 6 B. T. U..... 3%
December, 14 B. T. U..... 7%
January, 4 B. T. U..... 2%
February, 2 B. T. U..... 1%
Total deduction 23%
Grade for heating value..... 77%

In grading pressure we take into consideration the per cent of consumers affected by unsatisfactory regulation, the variation of the pressure as compared with the minimum, and the upper and lower limits of the pressure. The following examples illustrate grades that would be given for pressure in two different cases:

	Min. (In.)	Max. (In.)	% Variation of Min.	% of Consumers Affected	Deduction	Final Grade
Case I...	3	8	166.7	100	20%	80%
Case II...	1.5	6	300	5	5	....
	2	8	300	25	21	....
	4	8	100	60	6	....
	1	7	600	10	18	52%

Adequacy of capacity of a coal gas system would receive a grade of 90% if generating capacity, mains, compressors and purifiers were adequate, but the holder capacity were only 50% of the average daily sendout.

Instructions for Grading

Detailed instructions to inspectors have been prepared to insure uniformity of opinion, and, so far as possible, to eliminate the element of personal judgment. These instructions are now so specific that by their use anyone familiar with them would arrive at practically the same final grade as would one of our engineers. It has been our policy, which is apparent from a study of these instructions, to base the grading on service conditions and on records that any well managed company would desire to keep, rather than on compliance with the Commission's rules. For this reason the operating companies can make use of these instructions to grade their own service, delegating some individual to study service conditions and to assign a grade on the basis of his knowledge as secured through inspections. Some of the most progressive utilities already have this under consideration and a general adoption of the plan would, we believe, be highly beneficial.

Detailed instructions follow:

Pressure (Including Interruptions)

To determine the grade for pressure regulation, the deductions given in Table I should be made, variations during peak periods being used.

If no pressure tests have been made, give not more than 90%
For failure to notify Commission of long interruptions, deduct 15%
For failure to notify consumers of contemplated interruptions, deduct..... 10%

Heating Value

(a) For each 6 B. T. U. difference between the maximum and minimum daily averages in any month, deduct..... 1%
If results of several months are considered, use the average of the monthly variations.

Example:

Month	Max.	Min.	Difference
Jan.	580	520	60
Feb.	560	536	24
Mar.	570	546	24
Average			36 (Deduct 36÷6=6)

(b) Utility's Tests.
If the utility's tests show any monthly average to be below the standard, add together the difference between the monthly average and the standard for such months, and deduct ½% for each B. T. U. of the total so obtained. Use the results for not more than 6 months previous to date of inspection.

(c) Inspector's Test.
(1) On low pressure (565 B. T. U.)
If the average of the inspector's tests shows the gas to be below standard, but above 530, deduct ¼% for each B. T. U. below 565.
Deduct 1 to 2% for each B. T. U. below 530 (depending on likelihood that conditions found are representative).
(2) On high pressure standard (530 B. T. U.)
Deduct ½% for each B. T. U. below 530 down to 520.
Deduct 1 to 3% for each B. T. U. below 520 (depending on likelihood that conditions found are representative).

(d) If calorimeter tests are not made with required frequency, deduct 1 to 10%.

Handling of Complaints

Grading on this is to cover courtesy of employees, promptness and efficiency in disposing of complaints and success in satisfying complainants. To assist in determining the grade, the following apportionment of percentages is used:

1. Efficiency and promptness of employees in eliminating condition complained of 50%
2. Courtesy and tact of employees..... 30%
3. Action of company to prevent recurrence of condition..... 20%

Note: If no records of complaints are kept, give no more than..... 90%

Meter Testing

(a) If initial tests are not made, deduct.. 25%
(b) If periodic tests are overdue, deduct 1 to 4% for each per cent of meters overdue in accordance with the following:
If less than 12 months overdue, deduct 1%
If 13 to 24 months overdue, deduct... 2%
If 25 to 36 months overdue, deduct... 3%
If 37 to 48 months overdue, deduct... 4%

(c) If proper testing facilities and equipment are not provided (depending on seriousness of violation) deduct...1 to 15%
(d) If testing is not done in accordance with standard practice, deduct....1 to 20%
(e) If request tests are not willingly and properly made, deduct..... 15%
Note: If initial tests only are made, give not more than..... 25%
If periodic tests only are made, give not more than 75%

Purity

(a) For each per cent of tests showing presence of hydrogen sulphide (depending on amount present), deduct .....1 to 4%
(b) For each per cent of tests showing total sulphur content above maximum allowable (depending on amount present), deduct .....1 to 4%
Note: If no records of hydrogen sulphide have been kept, deduct at least 10%
If no records of total sulphur tests have been kept, deduct at least.... 5%

Consumers' Attitude

The following instructions serve as a guide in grading this factor of service:

Class	Attitude	Grade	Instructions for Classification
A	Excellent	95-100	Practically everybody satisfied and commending company for its service.
B	Good	85-95	Where those interviewed have practically no complaint; neither do they have any particular commendation to make, showing a general spirit of indifference.
C	Fair	70-85	Some complaint. A general feeling that service is not quite what it ought to be.
D	Poor	40-70	Attitude generally unfavorable. A general criticism of service but public tolerant.
E	Very unfavorable	00-40	Public critical and antagonistic with possible agitation for service from some other source.

The grading is to cover the attitude toward the company, its employees and its service, as this attitude has been developed through the furnishing of this particular class of service. Interviews should be held with at least two city officials if possible, representatives of civic organizations, representative business men and representative consumers. If it appears necessary to give a very low grade, greater care should be taken to determine accurately the public attitude.

Construction and Maintenance

Grade to be based on condition of plant and distribution system. Character of maintenance, possible hazard and probability of impaired service are to be considered.

Adequacy of Capacity

I. Generating capacity, deduct..... 0 to 40%
Includes existing condition of boilers, reserve machines, benches, blowers, exhausters, piping, oil pumps and oil storage.
II. High Pressure Mains and Compressors, deduct ..... 0 to 25%
III. Storage Capacity.
Storage Holder.
For each per cent of storage holder capacity below 75% of average daily send out, deduct (for water gas plants) 0.2%
For each per cent of storage holder capacity below 100% of avererage sendout, deduct (for coal gas plants) 0.2%
Note: This is on the assumption that the storage capacity should be 75% of the average daily sendout for water gas plants and 100% of the average daily sendout for coal gas plants.
Relief holder, deduct..... 0 to 5%
(Depending on whether relief holder is of sufficient capacity to permit reasonably continuous operation.)
IV. Distribution System, deduct ..... 0 to 10%
V. Purifying Capacity, deduct..... 0 to 5%
Including tar extractors, wash boxes, scrubbers, condensers and purifying boxes.

Provisions for Emergency

Plant Factor (F)
Reserve benches or standby machines and boilers, deduct..... 0 to 60%
Reserve exhausters, compressors, blowers, pumps (including sources of power for these auxiliaries), deduct ..... 0 to 30%
Reserve supply of fuel, oil and purifying material, deduct..... 0 to 10%
Line Factor.
Grade for town on transmission main with
(a) One way source of supply.
To arrive at grade multiply plant factor (F) for town from which service is received by factor K given below:

Distance of distribution system from serving plant	(K)
1000 feet to 2 miles	.98
2 miles to 5 miles	.95
5 miles to 10 miles	.90
10 miles to 20 miles	.85
20 miles to 30 miles	.80
30 miles to 50 miles	.75

(b) Two way source of supply.

Assume town C receives source from two sources, A and B. Then grade for C (Gc) will be:

$$(Gc) = (Ga + Gb) - \frac{Ga \times Gb}{100}$$

Where Ga = Grade for C if served from A only, as in case (a)

Where Gb = grade for C if served from B only, as in case (a)

Assume that town C receives its service from A and B and is located between them. Assume, further, that B has a plant factor of 80% for provisions for emergency and A has a plant factor of 60%. C is 40 miles from A and 15 miles from B, and taking into consideration the factor for distance C's grade would be 68% if it received service from B only and 45% if from A only. If served from both A and B, C's grade would be 82.40%.

C is so situated in this case that its provisions for emergency from both A and B are better than either A or B, since failure in one source would in all probability not occur simultaneously with a failure in the other.

Adjustment of Bills

Grade to be based on company's policy of refunding on over-registering meters.

Billing

Grade to depend on whether bills are sent, whether they are properly, accurately and completely made out (including accuracy of meter reading), whether suitable form is used, and whether billing is in every other way satisfactory.

Extension Policy

Grade to depend on degree of compliance with rule covering line extensions and on promptness in making extensions.

Furnishing New Service

Grade to depend on promptness in furnishing new service where main extensions are not necessary.

Pressure Surveys and Records

Grading to be determined by judgment of inspector.

Grading on pressure surveys to be largely determined by comprehensiveness of survey.

For failure to provide recording pressure gauge, deduct	15%
For failure to keep recording pressure gauge in continuous use, deduct	1 to 15%

Record of Complaints

The table below gives the possible deductions for failure to show on the complaint record the indicated information:

Final disposal	25%
Result of investigation	20%
Name and address	15%
Date of receipt	10%
Date completed	10%
Time of receipt	5%
Nature of complaint	5%
Time of day completed	5%
By whom conducted	5%
If duplicate records are not kept at local office, deduct	15%

Records of Heating Value

The grade on this subejct will depend on whether heating value test records are properly kept and are satisfactory as to form and completeness. If duplicates of these records are not kept in the local office, deduct 10%.

Records of Purity

The grade for this will depend on whether purity tests are properly made and records properly preserved.

If duplicates of these records are not kept in the local office, deduct 10%.

Records of Meter Tests.

The table below gives the possible deductions for failure to show on the meter test record the indicated information:

1. Accuracy as found and left	
Prover reading	35%
Temperatures, rate of flow, registration of meter and other data necessary to check test	20%
Percentage accuracy as found and left	10%
Entry of both runs	5%
2. Identification data	15%
3. Date, time and meter reading	5%
4. Reasons for test	5%
5. Name of tester	5%
If duplicates of these records are not kept in the local office, deduct	10%

Record of Meters

The table below gives the possible deductions for failure to show on the meter record the indicated information:

1. General results of tests with dates	25%
2. Places of installation with dates	25%
3. Name plate data, including identification number	15%
4. Date of removal and reasons	15%
5. Meter test summaries	10%
6. Repairs and final disposition	5%
7. Date of purchase	5%
If duplicates of these records are not kept in the local office, deduct	10%

Record of Interruptions

Grading to be determined by judgment of inspector and to depend on accuracy and completeness of record.

Bucking Competition to Get Industrial Business*

MEETING OIL COMPETITION ON ITS OWN GROUND

By W. D. Thompson, Indiana Natural Gas & Oil Co.

The Calumet Region is the workshop of Chicago. It is known for its steel mills, lead refineries, chemical plants, foundries, steel fabricating plants, and last, but not least, the oil refineries.

Visitors in this district always carry away the impression "Standard Oil". It is the biggest thing around the district. You can smell it, see it, and taste it, wherever you go. Its products are so well advertised that the various industries located anywhere near it seemed to have accepted oil as the universal fuel.

But oil for furnace fuel is not what Polarine is advertised as being. Industrial gas has done more to lubricate the wheels of progress of the furnace heating situation in the last two years than fuel oil has in the last twenty.

Two years ago the invasion of this oil district was started by our company for the purpose of selling gas for industrial purposes to these industries; which, by the way, we found fully equipped to burn fuel oil. We were laughed at by men who had been reared in an atmosphere of oil. "It couldn't be done with Gas." "They wanted quantity, not quality." "They had to get out tonnage." "Gas was all right for frying eggs"; but $1.40 a thousand for gas to heat steel appeared preposterous to them at first thought. Our rates are $1.40 net for the first thirty thousand, $1.30 net for the next twenty thousand, $1.20 net for the next twenty-five thousand, $1.05 net for the next four hundred and twenty-five thousand, and 75c net for all over half a million cubic feet on a monthly basis, the gas having a heat value of approximately 570 B. T. U. per cubic foot.

We pointed out that they could buy gas at 75c if they bought enough of it. We also showed them that their 3½c and 4c oil was really costing two or three times the invoice price when you compared it with what gas would do. The gas we were selling was high pressure gas. It was a complete fuel. There was no auxiliary equipment necessary, such as blowers, pumps, air compressors, or steam boilers. We were introducing a different fuel and a different system of burning; a one pipe, single controlled system that automatically proportions the gas and air, giving better service and producing a better product with lower final cost. A furnace of correct design produces material free from scale, reduces the size of the scrap pile, and increases output. The one-pipe system not only has the smaller initial cost, but also a smaller maintenance cost.

The Principal Motto

It is difficult to tell in a short paper just how we went about to get this business, but our principal motto was, "If It's Done With Heat, You Can Do It Better With Gas," and then to the people that said, "We will admit you can do it BETTER, but can you do it CHEAPER?" we showed them our second motto, "FUEL—Not What It Costs to BUY It, But What It Costs to USE It," and then started out on an intensive program of cost accounting to show that the cost of oil, plus other expenses to make it useful, is often two or three times the invoice cost of the oil as delivered at the plant. For example, oil costing 4c delivered to the plant, in every case we have analyzed costs not less than 8c when the total cost to use it was analyzed; and on one occasion as high as 12c.

Some Oil Costs

Just to give you an idea of some of the items which enter into the cost of burning fuel oil, I might cite, freight, switching, demurrage, leakage, shortage, unaccounted for, unloading, storage, pumping, heating, burner expense, air or steam for combustion, furnace maintenance, loss of production, taxes, insurance, land value, investment; and the labor, steam or electric power, to complete the cycle.

It is unfortunate, but nevertheless true, that the gas industry as a whole is not thoroughly sold on the possibilities of industrial gas, and it is with that idea in view that I have attempted to show in this paper, the gas companies' side of the method of getting business.

Of course, equally important is the design of a furnace, the construction of same, and the application; and while the industrial man must be skilled in these things, he can call on the furnace manufacturer and receive a large amount of help.

Don't expect the furnace manufacturers to do the selling for you, because what profit they make on the sale of a furnace is small compared to the continuous profit which you enjoy every month through the sale of the gas to heat the furnace.

Price Doesn't Count

In closing, I want to make clear one point. Don't let the price of gas stop you from going out after industrial business. You might not get all of the business at your particular rates, but you will get some, and you will also get valuable experience, which can be used later, should the price of gas be reduced or the cost of competitive fuels be increased.

*Abstract of paper presented before annual convention of Illinois Gas Association.

Court Upholds Referee in Indianapolis Rate Case

FINDS 90-CENT RATE CONFISCATORY AND ALLOWS $1.20 TO STAND PENDING COMMISSION ACTION.

Another step in the long transition period wherein the Citizens Gas Company of Indianapolis slowly is being brought to a parity in rate and other matters with the other big gas companies of the country, has just been taken in Federal court at Indianapolis. Judge A. B. Anderson, in a decision just given, supported William P. Kappes, special master in chancery, in his recent report wherein he held that a rate for gas to customers of the big Indiana gas utility of 90 cents is confiscatory and that a rate of $1.20 a thousand cubic feet, which the gas company has been charging for some time under authority of a temporary court order against the public service commission of Indiana, has not been too much up to the present—and shall remain in effect pending the making of a new rate by the public service commission.

This development in the big gas case in Indiana practically establishes the entire contentions of the Citizens Gas Company officials, and, furthermore, releases to the company perhaps one-half million dollars of impounded increases from the higher rate, which had been held under orders from the court until such time as the final court decision in the rate case might be made. The whole matter undoubtedly now will be handed back to the public service commission for the fixing of a new rate, higher than that 90 cent rate on which the commission took its stand many months ago as the correct basis of charge for the company, and from which it has now been dislodged by company action in the Federal court.

Judge Anderson, in his most recent decision in the gas case, held that a court is not a rate-making body, the duty of rate-making having been delegated by the state to the public service commission, and he suggested that the commission should proceed promptly to make a rate.

The ruling came on the day on which the court had set as the time for a hearing on exceptions filed to the report of the master in chancery, W. P. Kappes, by the public service commission. The master's report, as outlined recently in The Journal, was to the effect that a 90-cent rate is confiscatory of the company's property, and that rate-making is not a judicial function. In his report the master also found that a rate of $1.33 for gas would be necessary to give the company a 7 per cent return on a valuation of about $17,000,000. Ten exceptions to the master's report had been filed by A. B. Cronk, attorney for the public service commission. Four of these exceptions later were withdrawn and six were overruled by the court.

H. H. Hornbrook appeared as attorney for the gas company throughout much of the case in Federal court and made the arguments for the company at the final hearing. Mr. Cronk argued that bookkeeping methods of the company were inconsistent and irregular and he criticised the methods of J. Dorsey Forrest, general manager, as disclosed by testimony, in regard to charges to maintenance and charges to depreciation reserve and as to changes in the coke account. Judge Anderson finally asked Mr. Cronk if he were insisting that certain facts in connection with these charges were fraudulent, and Mr. Cronk answered that they were "susceptible of that interpretation." The judge thereupon said he could not assume they were fraudulent, could not hear the case all over again, and shortly began a series of questions to Mr. Cronk to bring out what rate he, as a representative of the commission, thought to be not confiscatory.

Mr. Cronk, at the reopening, moved to reopen the whole case so as to admit in evidence the net income of the company for December and January, which months, he said, showed a marked improvement, as did October and November. The court said these figures would be admitted, the company to supply a statement.

"Are you maintaining that 90 cents is a sufficient rate?" asked the court, and Mr. Cronk said he was.

"I understand you said before the master that any rate less than $1.10 would be confiscatory," said the judge. Mr. Cronk said he made such a statement as his personal opinion.

"Do you think so now?" asked the judge.

"In view of the improvement in October and November, and now in December and January, I've come to the conclusion that less than $1.10 would not be confiscatory," said Mr. Cronk.

Court's Duty Clear, Says Judge

Mr. Cronk said he thought $1 a sufficient rate. The court then said the commission was admitting that the 90-cent rate is confiscatory and that it was, therefore, the duty of the court to issue an injunction against the 90-cent rate. If the court enjoined, it was pointed out, then the commission would regain its power to make a compensatory rate. The judge said he wished to leave the commission free to make a rate.

The case had been in Federal court for ten months and the judge believed the commission during that time should have been investigating and should have been prepared to act promptly. Mr. Cronk had answered a question by the judge that the commission's investigation might take sixty or ninety days. The judge wondered why the commission could not take the evidence submitted to the master in chan-

cery in Federal court, correct it up to date, as affected by income of the company, and other matters and find a rate promptly. Mr. Cronk said the commission some time ago had its engineer start an appraisal. He said the commission might make a temporary rate. The judge then repeated a question as to why the commission did not get busy and ready to exercise its jurisdiction. Edgar Blessing, a member of the commission, arose at this point in the case, saying the court should remember the commission has many cases before it, more than the engineering force can look after properly. He pointed out that there are 1,400 utilities in Indiana, and the commission and its staff could not give all its time to the gas case. He set out further that the Indiana Bell Telephone Company case, which had been in Federal court, now was before the commission.

The judge then remarked that the Federal court ten months ago had issued a temporary order in the gas case permitting a rate of $1.20 pendente lite.

"The commission admits the court should authorize a rate until the commission makes one, but now the commission asks the court to change the provisional rate of $1.20," pointed out the judge.

He thought the commission not warranted in now asking for more time.

It seemed to the court, the judge then said, that when the master reported and the defendant admitted 90 cents confiscatory, the commission attorney was not in a position to ask the court to take up figures, and to change for a short period of from sixty to ninety days the rate from $1.20 to something less.

"Even for a short period," said Mr. Cronk, "the public should have a lower rate if it is entitled to it."

"Ask me to examine all these figures?" said the judge humorously. "I get a salary, but not enough for that."

Mr. Cronk declared that the rate of $1.20 had been more than adequate since September 1, 1922. The judge asked what about before that date. He desired to know whether it was conceded $1.20 was fair up to now under all the circumstances. Mr. Cronk said $1.20 may not have been more than enough from last May, when the company appealed from the order of the commission refusing to increase the rate from 90 cents to $1.25, to September. He remarked that the company must take the bitter with the sweet.

Court's Bill Doubled

"I'm as bitter as you," said the judge. "My gas bill has doubled."

Mr. Cronk remarked on the impracticability of varying the rate frequently to meet changing financial conditions of a company. Judge Anderson asked if there was not a difference between a public utility corporation, regulated as to rates, and a private corporation that can control prices. The judge then again asked Mr. Cronk what should be the rate for now until the commission finds a rate. Mr. Cronk said he believed $1.00 sufficient for he said the total net earnings of the company for the last nine months had been $842,000, and said if the net for February, March and April was up to the average, the net income of the company would be $1,120,000, which, he said, would be more than the company ever before earned in a year. If the company earned $900,000 now it would be earning as much as it did in 1917-1918-1919 when it was not complaining, he said. He predicted a continuance of good earnings.

Judge Anderson remarked something about "the eve of prosperity" and then, in humorous vein, said: "Well, the legislature and congress have adjourned."

Mr. Hornbrook, for the company, said the income for May, June, July and August of last year was "not half compensatory."

The judge then asked what the master in chancery found as to the value of the property. Mr. Cronk said about $17,000,000.

"And what do you say it is?" asked the judge.

"Around $13,000,000."

"Do you want me to guess?" asked the judge.

"Of course the master guessed, to a certain extent," said Mr. Cronk.

The judge seemed to agree that there is some guesswork about the valuation of utility properties. He suggested that the truth might be between the extremes.

"What amount would be fair under all the circumstances?" asked the judge.

"I think $13,000,000," answered Mr. Cronk.

"I don't think that's fair at all," said the judge.

Then arose a discussion of valuation for ratemaking purposes in which Mr. Cronk submitted that it would not be fair to take a date for a valuation as of July 1, 1922, which he said the master took, a date of high prices. For the stabilizing of utilities, for their own good, Mr. Cronk said, valuations should not be based on peak prices, for securities might be issued under such valuations and when prices dropped and valuations dropped utility companies might experience trouble. The judge's replies indicated that he did not care greatly for that line of argument. Eventually the judge characterized Mr. Cronk's defense as the argument of the "fellow whose defense was that he just did not want to pay the note."

Finally Mr. Cronk, evidently embarrassed, remarked: "I have nothing more to suggest, your honor," and sat down.

Did Not Like Going Value

Then the judge took up the question of intangibles and said he did not take much stock in going value. Mr. Hornbrook said the master had allowed 10 per cent for going value and pre-construction expense, and cited a Federal court decision in the Denver water company case, upholding going value.

As the Journal Views It

ONE HUNDRED YEARS OF GAS IN NEW YORK CITY

Monday, March 26, marked the one hundredth anniversary of the granting of a franchise by the New York State Legislature to a gas company in New York City. As related in another column this occasion was marked in suitable manner by the Consolidated Gas Company of New York. From a humble beginning the serving of gas to the population of New York has become one of the big businesses of the greater city and has had a large part in the progress that has been made. It would be interesting to be able to measure just how much the development of the great city has been due to the efficient service that has marked the history of the gas company.

In the beginning New York was served by the New York Gas Light Company, which since that time has become part of the Consolidated Gas Company which now serves several millions of people daily.

Exactly as gas service has progressed in New York City so has it progressed throughout the world until today general industry is becoming more and more dependent upon the service rendered.

The "American Gas Journal" takes great pleasure in extending to the Consolidated Gas Company and its officers and employees its congratulation upon having reached its hundredth anniversary with such a splendid record.

GETTING IDEAS ABROAD

It is just one year ago that the "American Gas Journal" started a representative on a trip around the world; a trip that will take two years and which will carry him into practically every country. During the past year his contributions have created a great deal of favorable comment and we have been asked to continue them.

In this connection it is interesting to note that there are scheduled to depart within a few weeks several representatives of the Insull properties for a tour somewhat similar to that which is being made by the "American Gas Journal" representative. We are told that these gasmen will make an intensive study of conditions abroad and will carry back to their headquarters reports of progress that is being made.

Such trips as those which the Insull representatives are making as well as that which is being made by the Journal man will do a great deal toward helping to bring a closer relationship between gasmen everywhere.

UNIFORM REGULATION

Although there has been some effort made toward making rulings by various state regulatory bodies uniform there is still a great deal of room for progress. This is not said in a spirit of destructive criticism but rather with the thought in mind that action is being taken which will eventually result in great good for the gas industry. One direction in which progress has been marked is in connection with accounting and the adoption of a uniform system by several states. But in the matter of rulings on various operating problems there is a wide variance. Some will say that this is due to the fact that conditions existing in different states are so different that any uniformity is utterly impossible. This may be true in minor details but in the application of an underlying principle there is no possibility of difference. Either the same rule must apply or there is an error in the principle.

Of course so far as New York State is concerned at present there is no possibility of rulings being made that will hold good for any length of time and it would, indeed, be a bold prophet who would predict what the outcome will be. There is pending in the State Legislature so much that is conflicting that it is not possible for anyone to say what will happen. But while this condition holds true today it does not follow that this will continue to be true for any length of time for the people of the State will soon make known their wishes.

COMMENTING ON BURDICK'S ARTICLE

Comment of an extremely commendatory nature is beginning to be received regarding the article by R. H. Burdick, which appeared in the March 17th issue of the "American Gas Journal." Gasmen have been impressed with the thoroughness of the discussion of the methods involved and they have not hesitated to say so. Within the next few weeks it is hoped that based on some of these comments Mr. Burdick will be able to discuss other phases of manufacture that will prove to be as interesting as was his other. But Mr. Burdick will write numerous other articles during the coming months that we believe will be as stirring as have been the two already published.

Advertise "Your Gas Service"

COMPANY TELLS ITS STORY TO PUBLIC VIA NEWSPAPER ADS

By O. Foerster Schully

The Southwestern Gas and Electric Company, of Shreveport, La., while serving natural gas to its consumers, is experiencing difficulties that are likely to be experienced by all gas companies, handling either the natural or manufactured product. The rapid development of Shreveport has demanded the development of its facilities, the extension of its mains and the improvement of its service. The earnings upon its invested capital have been greatly restricted and limited by law. To meet the demand for development, money must be had for new construction. The city of Shreveport and its people are opposed to an increase in rates. That is the situation in a nutshell.

Now, to lessen its difficulties, the Southwestern Gas and Electric Company has recently published a series of seven advertisements under the title of "Your Gas Service," explaining clearly and concisely why it is necessary for it to increase the present rates. The copy has been run in the leading newspaper of the locality at irregular periods with two or three days intervening between each advertisement. In spite of the fact that two of the ads deal solely with the question of natural gas supply, it is not to be doubted that the series as a whole will interest gas men throughout the country—even those who are delivering the manufactured product to their consumers, for the company gets down to the fundamentals of the gas situation and explains them to the public in a way that will bear repetition.

The first advertisement remarks that the natural gas supply of the Southwestern Gas and Electric Company is getting farther and farther away from its area of consumption. To quote:

"On Monday, January 9, the first work on a new well for our use was begun in Panola County, Tex. This was the well at which the derrick blew over on the second day, killing one man. While we have had a supply in this field from 9 wells, the new well is four miles from the others, and a mile farther than our nearest lateral pipe line and three miles from our nearest trunk line. As nearly everyone in this section knows, we got our first supply from the Caddo fields in Louisiana, only twenty-four miles away. We are now working in Texas, thirty-five miles away."

"Since undertaking to supply Shreveport with natural gas," the paper announces, "a total of 241 wells have been drilled for the service. Many of them were 'dry holes' and a great proportion are now dead, or do not furnish gas in commercial quantities. The average life of the wells has been only about two years, but there's no certainty, with so many tapping the supply, that future wells will continue to have an average life of two years.

"This new well may be a 'dry hole.' But suppose it proves to be a producer? When all done, it will have cost over $25,000, not counting piping and upkeep. It's a pretty sure thing it won't be good for over two years, and it may give out before that. The death rate of gas wells is very high, but we must keep ahead of the death rate, or some fine morning Shreveport will wake up and find itself without gas.

Constant Supply of Capital Necessary

"New capital can be secured from investors only, and only by attracting them with an assured and fair return. A constant supply of new capital is just as necessary to any public utility as a constant supply of fuel."

The second ad does not confine itself to the natural gas field, but attacks one of the most vital problems that gas companies in general are encountering—that of financing. It is headed: "Where Money Comes From to Give a City Its Gas Service," and draws the reader's attention to the fact that a public utility in a growing city is never finished. New pipe lines have to be built, it explains, city mains have to be extended and meters supplied. New capital is needed all the time.

"Where does this capital come from?" it asks.

"First: It does not come from banks.

"True, the large investment banks do buy the stocks or bonds of companies, but it is only to sell them again to investors. Bankers buy and sell securities just as grocers buy and sell groceries, not to keep but for a commission or a profit on the sale. The bankers' clients are investors. If investment bankers, after careful investigation by experts, like the looks of a Shreveport investment they so advise their clients. But if the advice is bad they soon lose their clients.

"Second: New capital cannot come from earnings.

"Unlike a Ford automobile factory, no public utility is allowed to earn enough to supply new capital. Its earnings are limited by law, and it cannot earn surplus profits in the large amounts needed each year for new construction.

"Third: Capital comes in small part only from the local investor.

"No city can supply all the capital it needs. It must come from the investors the country over. The Pennsylvania Railroad has about 140,000 investors; the American Telephone and Telegraph Company more than 160,000. The railroads of the United States have nearly a million stockholders, and so it goes.

"The final and only source of new capital is the investor, and he must be attracted; he cannot be coerced. The law declares that the investor is entitled to a fair return on his investment."

What Is a Fair Return?

There is a close tie-up between the second and third advertisements. The latter is introduced with the relevant query, "What is a 'fair return' in the gas business?" and explains that "fair return" is a term used in public utility cases with a very special meaning. In ordinary business one may make 10 per cent, 20 per cent, or whatever return his skill, foresight, good management or natural advantages may bring in. Not so in public utilities.

"The laws of this State," it remarks, "like those of other States, limit the amount public utilities may earn to 'a fair return' on the value of the property used and useful in the public service. Note carefully—no public utility is entitled to earn a return on its capitalization, watered or unwatered, but only on the value of its property. The question of water has no bearing whatever in determining rates for service. In our application for new rates it will be not to earn a return on capitalization but on the value of the property.

"The actual percentage is not fixed by law. It varies according to the nature or risk of the business. The actual amount or percentage necessary is determined in each case by public service commissions, from the facts presented under oath. The principle, which has guided public service commissions in general, and which has been upheld in the highest courts, is this: . . . A 'fair return' is a return necessary to attract, in the open market, a flow of new capital into the property sufficient to meet the public's requirements.

"Nothing less is adequate—nothing more is necessary. Under a fair return thus determined (by the public's need) the public stands to lose nothing and to gain everything.

"We have asked for an increase in our gas rates because we are furnishing gas at below the actual cost of the service, without even making allowance for money needed to provide renewals and replacements, due to wear and tear, or any return to the investor whatever. We have applied for rates, as the law contemplates, which will cover the cost of the service, including taxes and reserves for depreciation or obsolescence and a fair return. Without this fair return no company can maintain good and dependable service.

"Poor service or loss of service costs a community far more than the slight increase necessary to provide service that is adequate and dependable. We are furnishing gas service at less than the cost of the service, itself. It undermines our credit and ability to continue good service."

Tells of Losses

The fourth ad continued this trend of thought, with the startling announcement, in the first paragraph, that in the last six months the company has lost $44,088.56. The figures of the business, from June 1, 1922, to November 30, 1922, briefly summarized, as they will be presented under oath to the Public Service Commission of the State, are as follows:

Receipts and Expenses

Gross receipts		$327,867.10
Operating expenses, including taxes	$104,230.52	
Cost of gas	267,725.14	
		$371,955.66
Deficit for operations		$44,088.56

In support of its argument that a constant flow of new capital is needed for extension of service, the population of Shreveport in 1910, as compared to the population in 1920, with a proportionate estimated increase for 1930, was published. "And the increase of gas service involves more risk of loss of capital," it remarked, "than increase of any other kind of utility service."

Growth of the City

In 1910 Shreveport's population was	28,015
In 1920 it was	43,874
The same rate of growth would, in 1930, give it	59,733

Growth of Investment

*1912—New construction	$55,700
1922—New construction	165,000
1923—New construction (estimated)	175,000
1930—New construction (estimated)	250,000

* The present company began in 1912.

The above is an estimate of the gas distributing system, only. As the company distributes natural gas, it is obvious that additional money will be needed for the finding, drilling and upkeep of new gas wells.

"In the 10-year period from January 1, 1912, to January 1, 1921, inclusive," the company explains, "this company has expended for construction, expansion and extensions in its service, the sum of $641,759. The same rate of growth and demand shown in that 10-year period would call, in the next 10-year period, for at least an equal amount. But it will probably be more."

Increase of Meters

The increase in use of domestic meters in 10 years has been:

1910	4,118 domestic meters in use
1920	10,134 domestic meters in use
1930 (estimated)	16,150 domestic meters in use

Gas Furnished for All Purposes

1910	1,492,100,000 cu. ft.
1920	4,798,100,000 cu. ft.
1930 (estimated)	8,104,100,000 cu. ft.

Dividend Record

Between 1912 and 1922, both inclusive, the company has paid out in dividends, the sum of $1,387,905. This is an average of only a trifle over 4 per cent for the 10 years. It has never declared a stock dividend.

"The average rate of return needed to enable companies such as ours to expand," the ad concludes, "is at least 8 per cent. We are now earning no interest on our gas investment whatever. On

our present rates, not a company in the United States could be induced to buy our gas business."

In its fifth advertisement, the company reviews the question of why it is necessary, as it proposes, to increase domestic rates and not industrial rates. "Let us," it remarks, "compare the costs of the two different kinds of service. Let us call one wholesale gas and the other retail gas."

"Retail" Gas

In considering the question of "retail gas" it draws attention to, first, that the domestic consumer has first call on the gas, industries having use of the surplus only. Second, the greatest part of the distribution system is for the domestic users. Third, the use of domestic gas "comes in a lump—a daily peak demand and it lasts only for a few hours. But we have to stand ready to serve you 24 hours." Fourth, very little domestic gas is used in summer and a great deal in winter—the yearly peak demand, lasting about 3 months. But the plant investment is there the year 'round.

"Under present conditions, the cost of bare distribution only to domestic users (with no allowance for wear and tear, interest or any return to the investor) is about twice as much as the cost of the gas distributed."

In considering the question of "wholesale gas," it remarked that costs of operation were less because, first, in proportion to the amount of gas delivered, the cost of distribution is almost negligible and, second, that gas for large consumers is used at an even rate through the day and year. "It's the old principle; wholesale costs are less than retail costs. This applies to the gas business as well as to the grocery business."

"But that is only half the story," it continues. "If Shreveport is to grow and prosper, it needs to promote its present industries and bring in new industries. Natural gas must meet the competition of other fuels and especially, in this section, of fuel oil. To raise the price of industrial gas under the existing conditions would force industries to drop gas and take up fuel oil, or quit altogether. In consequence, the price of gas for domestic consumption would have to be raised much higher than the new proposed domestic rate. To deprive Shreveport industries of natural gas would mean, to workingmen, fewer jobs and fewer pay days; to merchants, fewer customers and more bad debts; to the city, lower taxable values and less income for public purposes. To starve public utilities makes them public futilities. It results in public loss—not in public gain."

The sixth advertisement discusses the necessity of a $1 minimum charge.

"An ideal rate schedule," to quote, "for gas would cover three different kinds of costs which arise in providing your gas service:

1. "A DEMAND CHARGE. To illustrate: If you reserved ten rooms in a hotel and used only one, keeping the others out of service, you would not expect a bill for only the room you used. Similarly with an investment all along the line needed to meet a heavy demand for gas at any time, with your house equipped so that you could use, if you wished, 50,000 cu. ft. of gas a month, should you expect to pay for only 1,000 if that's all you've burned?

2. "A SERVICE CHARGE. This is for tying up that part of the total investment needed to supply plant for service work, as well as meter reading and repairing, accounting, collecting and standing ready to serve you whether you use gas or not.

3. "THE ACTUAL COST OF GAS. It is often asked why the smaller users have to pay higher rates for gas than the large users. If domestic consumers paid separately for these three services in direct proportion to their worth the small consumer could get the gas, as such, at as low a cost as the big consumer.

"But the above is not the actual condition. Our charges are not billed in three parts. This is a matter which the commission regulates. At the present time not one-half of the domestic users (the small ones) are paying the cost of their demands and service alone. The other half (the larger domestic users) have to pay not only their own demand service costs, but those of the other fellows. The proposed minimum charge is to equalize these costs in part but even at $1 it will do it in part only."

The seventh and last ad returns to the question of natural gas. It asks, at the outset: "What About That 'Plentiful Supply of Cheap Gas?'" and answers the question quite frankly, and thoroughly.

"It is a common but mistaken idea in Shreveport that we are trying to 'put something over' on the public when we ask for increased rates based on a cost of gas at 13½ cents. Added to this is the rather general idea that, if we only would, we could get all the gas needed at these low prices. What is the answer? There is an old saying that 'a half truth is worse than a whole lie.' The half truth in this instance is this: The cost of a very small part of the gas needed (about 1-24th) is cheap gas, costing us 6½ cents a thousand cubic feet.

Tells of Its Needs

"The other facts in the case which make up the whole truth are that we need, in order to supply the possible daily demand, about 60,000,000 cu. ft. and there is available only 2,500,000 cu. ft. a day of the cheap gas. This cheap gas is largely 'casual gas' bought from oil producers who have happened upon it in the search of oil. Casual gas is 'velvet', when an oil company has a chance to sell it at all. If not near a pipe line, there is no market. Even the casual gas we are buying may give out at any time.

"It is one thing to sell casual gas for whatever you can get; it's quite another for a company to enter upon a contract for a long term of years to supply, every year, a large amount of gas. The very company which could sell casual gas at a ridiculously cheap rate would hesitate to take the chances on making such a contract at even a 15 cents rate.

"But we must be prepared at all times with an adequate supply. At this very time, this company is, as these things go, as well assured of a dependable supply as we have ever been. We are sure of a supply through next autumn, but only partly covered for the following winter. The rest of next winter's supply must come from new wells yet to be drilled. Casual gas alone is not enough to supply us for one day."

Cheer Up

The fellow in the city
  Dreams of smelling new mown hay,
While the farmer's one desire
  Is the bright light on Broadway.

The man who prints wall paper,
  And the man who's making rugs
Are very prone to envy
  The chap who's mixing drugs.

The head of Smith & Company
  Can feel it in his bones,
He isn't half as prosperous
  As the firm of Brown & Jones.

Since the days of Eve and Adam
  Right up to now, 'tis true
We've always craved a gambol
  In fields and pastures new.

This world is full of trouble,
  We suffer not alone.
The chap you always envy
  Has some headaches of his own.

* * *

Behind the Door Marked PRIVATE

(A play in one act)

Cast of Characters

Mr. Martin—Pres. Martin Mfg. Co.
Miss Burke—A Stenographer.
Billy—The office boy.
Watkins—A Salesman.

Scene: Private office of the head of large corporation.
Time: 10:30, any day.

Miss Burke

Mr. Martin, about that letter to Samson & Co. you dictated late yesterday afternoon, did you say "Your attitude in this matter is inexplicable or ——"

Mr. Martin

I told you to get that letter off last night.

Miss Burke

Yes, sir, but I wasn't sure about it and I didn't want to mail it without asking you.

Mr. Martin

I dictate very slowly and there is no reason why you should not get your notes correctly.

Miss Burke

I've been a stenographer five years and no one has ever complained of my work before.

Mr. Martin

I don't give a — — care how long you've been working. When I say "Get that letter off tonight," I mean it.

Miss Burke

But Mr. Martin ——

Mr. Martin

Don't Mr. Martin me——

Miss Burke

Say, you can't talk to me like that. I don't have to work for any old grouch. I'm going to get married next week, any way. Write your letters yourself, I've quit. (She exits)

(Billy enters) Billy

Man outside wants to see you, sir.

Mr. Martin

What's his name?

Billy

Don't know, sir.

Mr. Martin

Find out—and wait—what does he want?

Billy

Don't know, sir.

Mr. Martin

Well, for the love of Mike, find out.

Billy

Yes, sir. (Exits.)

(Telephone rings).

Hello—hello, dear—nothing—nothing—no, I'm not cross—no I'm not angry at you—no, no, no. What is it, dear? I'm——

(Billy enters)

He's an insurance agent, sir.

Mr. Martin

Another pest.

(Into phone): No, dear, no, I didn't call you a pest. Please tell me what you want, I've got a million things to do—Oh, you do? Alright, I'll phone for the tickets right away. Yes, I'll wear my Tuxedo if you want me to. Yes, goodbye dear.

Billy

Do you want to see him, sir?

Mr. Martin

See who?

Billy

The man who is outside!

Mr. Martin

What man?

Billy

The insurance agent!

Mr. Martin

NO. NO. NO.

Billy

All right, sir, and can I get off this afternoon, you see my—

Mr. Martin

Yes, you can go to the ball game.

Billy

Thank you, sir. (Exits.)

(Enter Watkins.)

Watkins

Mr. Martin, I've been with this firm three years and my sales have increased and—

Mr. Martin

Not now, Watkins, we'll talk about your salary later in the week.

Watkins

But Baxter & Co. have offered me—

(Phone rings.)

Mr. Martin

Hello, Who? My lawyers—put them on. Hello, Tom. What? The Internal Revenue Department returned my income tax return. What? Not enough? Say, how in the — — —

CURTAIN.

Public Utilities Securities Market Report

Prices of Representative Gas Bonds

(Quotations furnished by The National City Company)

Company.		Maturity	March 29, 1923. Bid	Asked
American Lt. & Trac. Co.	Five Year 6s	May 1, 1925	108½	109½
Brooklyn Union Gas Co.	First Consol. 5s	May 1, 1945	96	97
Columbia Gas & Elec. Co.	First 5s	May 1, 1927	95¼	96
Consol. Gas, Elec. Lt. & Pr. Co. of Baltimore	First Ref. 7½s	Dec. 1, 1945	110	111
Consol. Gas, Elec. Lt. & Pr. Co.	General 4½s	Jan. 1, 1935	90	91¾
New Amsterdam Gas Co.	First Consol. 5s	May 1, 1948	79½	81½
Denver Gas & Elec. Co.	Gen. (now 1st) 5s	Jan. 1, 1949	92½	94
Detroit City Gas Co.	Gold 6s	Jan. 1, 1947	100	100¼
Equitable Illum. Gas Lt. Co. of Philadelphia	First 5s	Jan. 1, 1928	99½	101
Hudson County Gas Co.	First 5s	Nov. 1, 1949	93	94
Laclede Gas Light Co.	Ref. & Ext. 5s	Apr. 1, 1934	94	94¾
Louisville Gas & Elec. Co.	First & Ref. 7s	Called Dec. 1	100	—
Michigan Light Co.	First & Ref. 5s	Mar. 1, 1946	89½	91½
Milwaukee Gas Light Co.	First 4s	May 1, 1927	93	93¾
Pacific Gas & Elec. Co.	Gen. & Ref. 5s	Jan. 1, 1942	88¾	89¼
Pacific Gas & Elec. Co.	First & Ref. 7s	Dec. 1, 1940	105½	106½
Cal. Gas & Elec. Corp.	Unif. & Ref. 5s	Nov. 1, 1937	95½	96½
Peoples' Gas Lt. & Coke Co.	Refunding 5s	Sep. 1, 1947	88	89
Chicago Gas Lt. & Coke Co.	First 5s	July 1, 1937	94½	95½
Portland Gas & Coke Co.	First & Ref. 5s	Jan. 1, 1940	88	89½
Seattle Lighting Co.	Refunding 5s	Oct. 1, 1949	81	83
Southern California Gas Co.	First 6s	Nov. 1, 1950	97	99
Utica Gas & Electric Co.	Ref. & Ext. 5s	July 1, 1957	90	91½
Washington Gas Light Co.	General 5s	Nov. 1, 1960	94	95
Western States Gas & Elec. Co. of California	First & Ref. 5s	June 1, 1941	90	92

Cities Service Company in February

Both gross and net earnings of Cities Service Company for the year ended February 28, 1923, showed substantial increases over the year ended last month, January 31, 1923, and further marked increases over the year ended February 28, 1922, when net earnings amounted to $12,396,794, as compared with $14,727,079, which shows an increase in net earnings of more than 18 per cent for the year ended February 28, 1923. Net earnings for the month of February, 1923, amounted to $1,571,973, as compared to $1,356,030, for January, 1923, and $1,199,786, in February, 1922.

In the year ended February 28, 1923, there remained a net to Common Stock and reserves of $7,358,593, after payment of interest charges and Preferred stock dividends, which was equivalent to $15.80 earned during this period on the average amount of Common stock outstanding, as compared to $11.66 for the year ended Feb. 28, 1922, which is an increase of over 37 per cent. Dividends on the company's Preferred stock were earned 2.50 times during the year ended February 28, 1923, as compared to 2.11 in the year ended February 28, 1922. Total surplus and reserves as of February 28, 1923, amounted to $45,892,877.

Offers Bond Issue of $950,000

The Salina Light, Power & Gas Company, Salina, Kan., a subsidiary of Cities Service Company, has arranged for the issue of $950,000 of first mortgage 6 per cent sinking fund gold bonds, series A, dated April 2, 1923, and due April 1, 1943. These bonds are being offered through Henry L. Doherty & Co., together with Taylor, Ewart & Co., of Chicago, Ill.

The Salina Light, Power & Gas Company is a Kansas corporation and operates without competition in the city of Salina, Kan., which the company serves with gas, electric light and power. These bonds represent the only funded debt of the company and are secured by a first mortgage on all of its property. Net earnings of the company for the year ended January 31, 1923, amounted to over three and one-half times annual bond interest requirements, including the amount of the present issue.

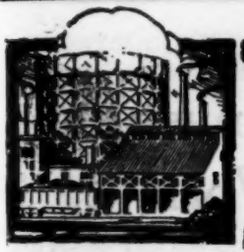
Interest on the new series A bonds is payable semi-annually April 1 and October 1.

Receiver Named for Gas Co.

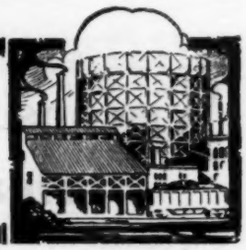
Shelbyville, Ill. — William Bass, of this city, former secretary of the Citizens' Natural Gas, Oil and Water Company, was appointed receiver for the company by Judge Harry C. Morrison, in the Shelby Circuit Court. The appointment was made following a hearing of the suit for a receiver and an accounting filed against the company by J. Harvey Snider, of Fountaintown, one of the stockholders. The plaintiff asked that a receiver be named to wind up the affairs of the company.

Lawrence Gas Co. Cuts Cost of Coke

Lawrence, Mass. — Officials of the Lawrence Gas Company have announced a cut in the cost of coke to local consumers of approximately $3 per ton. No more coke will be brought here by the local company for distribution, but the company will continue to sell its own product at the reduced rate.



NEWS OF THE GAS INDUSTRY



New York City Gas Service 100 Years Old

Monday, March 26, marked the 100th anniversary of the granting by the State Legislature of a charter in perpetuity to the New York Gas Light Company, and the Consolidated Gas Company of New York, which absorbed the original company thirty - nine years ago, celebrated all week.

The main and branch offices of the Consolidated looked more like museums than gas offices. They had exhibits of original gas burning ranges, heating apparatus, gas water heaters and other old and modern appliances. In some cases relics have come from public museums and private collections.

The history of the Consolidated, beginning just 100 years ago, is typical of Knickerbocker history.

The legislative charter having been granted March 26, 1823, the Common Council of the City of New York issued a franchise on May 12, 1823, permitting the laying of gas mains "for lighting the houses and public streets in Broadway, from the Battery to Grand Street."

The original company had Samuel Leggett as its president. Mr. Leggett's fellow incorporators were Moses Cunningham, Joseph Ogden Hoffman, George Youle, Richard S. Williams, William Seaman, Thomas Morris, Henry Eckford, Robert Bogardus, George Buckmaster, William S. Coe, Samuel Ackerly and Thomas H. Smith. Samuel Leggett's house at 7 Cherry Street was the first house to be lighted by the new illuminant.

They opened their subscription books and sold $200,000 worth of stock at $50 a share on the instalment plan. All you had to do was to pay $5 a share when you got the stock and $5 a month per share thereafter until it was wholly yours. And there, incidentally, seems to be the only principle of the New York Gas Light Company that has survived intact the hundred years. In January of this year the Consolidated, the same company, under another name, sold $15,000,000 worth of preferred stock at $50 a share on the installment plan.

There was quite a furore here in New York City the day that the first of the subways was pronounced ready for operation. The Mayor and all the rest of the dignitaries—public and private—rode on the first train. The newspapers paid quite a deal of attention to it and Father Knickerbocker pouted out his chest in the manner of the man who realizes that he is on his way to greatness. But, relatively of course, there was just as much of a flurry over the note received by the Mayor and the Aldermen and the Commonalty of this city on May 9, 1825. The note was signed by Mr. Leggett and it informed all the above that the New York Gas Light Company was ready to supply and light the public lamps in Broadway from the Battery to Grand Street.

Gas men throughout the country will be interested in obtaining a copy of the April number of Gas Logic, the magazine published in the interest of the Consumers of the Consolidated Gas Company. Robert E. Livingston, publisher of Gas Logic has offered to forward copies to all gas men who are interested. A postcard, addressed to Mr. Livingston, 1 Madison Avenue, New York City, will bring a copy of the number. It is well worth while.

In 1826 gas cost the user $10 a thousand cubic feet. Despite that the little gas company was expanding tremendously. In 1834 it was supplying 11,000 lights and about 91,000 cubic feet of gas were being used six nights out of every seven. The price had fallen to $7 a thousand feet, but it jumped back to $8 three years later on account of the increased cost of manufacturing materials.

On November 10, 1884, the Consolidated Gas Company was born of a merger of six independents. And today, instead of that one lonely and abused gas meter which Timothy Dewey fetched back with him from England, there are 937,607 in Manhattan and The Bronx alone.

There are 419 miles of gas mains in Manhattan and more than 600 miles of mains in The Bronx. Many miles of these are forty-eight inches in diameter. Mains leading from Astoria, L. I., works are the largest in the world—seventy-two inches in diameter. What was once the little Gas Light Company became one of the most valuable supports of Gen. Pershing's A. E. F. during the world war The great Astoria plant produced sufficient toluol to load 10,672,480 shells for the American artillery. Seventy per cent of all the trinitrololuol (T.N.T.) the United States produced came from that one plant. More than ninety per cent of the carbon granules that the American doughboys used in their gas mask canisters came from the Astoria works.

And all that as the result of the growth of the tiny gas works at Hester and Centre Streets. In 1823 they hooted the very first program of that plant. And when you hark back a hundred years and consider how staggering was that $1,000,000 capitalization, think that last year the Consolidated spent $14,198,910.24 just for repairs and renewals, or in other words just to keep the system in a state of effciency.

Wisconsin Association in Annual Convention Hears Plans for Development Work

Milwaukee, Wis.—"More gas was manufactured last year than a year ago despite the handicap of the coal strike and the high cost of labor," said J. P. Pulliam, former president of the Wisconsin Utilities Association, in opening the annual convention of the organization, of which the Wisconsin Gas Association forms a section. The sessions were held at the Hotel Pfister.

Nearly every plant in the state showed a higher efficiency record than ever before, Mr. Pulliam went on, and declared that the increased demand for the service of all public utilities in the state meant increased prosperity for the state.

"Prosperity of the utilities means prosperity of a community," he went on. "When a state is prospering, utilities are demanded."

Mr. Pulliam declared that Wisconsin utility companies will spend between $25,000,000 and $30,000,000 for additions and improvements during this year. Among the larger gas companies who have an improvement program he mentions:

Milwaukee Gas Light Co., $800,000; Beloit Water, Gas and Electric Co., $350,000; Madison Gas and Electric Co., $331,000.

Most of the money for these extensions will have to be obtained from the investing public, Mr. Pulliam pointed out, and added that already 100,000 persons in Wisconsin had purchased public utility securities. Persons throughout the state are selling their stock in order to give their customers opportunity to become partners in their business.

"Every effort should be made to acquaint the public with the facts concerning our problems," the speaker went on. "A record of the amount of newspaper advertising used by utilities in Wisconsin shows substantial improvement over last year. All this advertising is of direct benefit to a company. Utilities can make no better investment than to tell the story to the public fairly and honestly.

"Our association should increase its co-operation with the university in developing students for careers in the utilities business. Companies should seek opportunities to invite university and college classes to inspect their plants so that the rising generation may know the true story of our industry."

The greatest handicap to better gas, electric, street railway and telephone service was that the public failed to understand that the utilities companies desired to furnish good service at the lowest possible cost. So declares James P. Barnes, president of the Louisville Railway Co., speaking before a joint session of the convention.

"Never was there a business which so intimately depends upon the spirit of true co-operation as does the public utility business," said Mr. Barnes. "And this spirit of co-operation must permeate not only the investor and management but also the employees and customers.

"True co-operation and understanding cannot be obtained without publicity. Publicity is a two-edged sword. Like the legendary sword of King Arthur, publicity is a sharp, powerful and dangerous weapon. The formula for self-protection in its use is simple, and can be expressed in one word —honesty. Honesty in every phase of publicity—straight-forward, uncompromising, fearless—can bring about one result, namely, justice.

"The operator who will use publicity honestly and fearlessly, telling his trials and successes as news when they are news, admitting mistakes when such are made, correcting abuses and faults cheerfully and publicly, will build up a sympathetic understanding on the part of the public. The business of conducting public utilities is crowded with news and human interest stories to which the newspapers should have free access. Advertising for increase of business such as the sale of securities and similar purposes is essential.

"It is my firm belief that no detail is too small and no policy too large to be frankly discussed and completely explained to the public as well as to employees."

At the election of the gas section A. F. Davey was elected chairman and J. G. Felton, of La Crosse, vice-chairman, for the ensuing term. Bruno Rahn, of the Milwaukee Gas Light Co., the outgoing chairman of the gas section, was elected vice-president of the Wisconsin Utilities Association. The other newly elected officials of the association are:

President, Harold L. Geist, Wausau, vice-president and general manager of the Wisconsin Valley Electric Co.

Treasurer, G. C. Neff, Madison, vice-president Wisconsin River Power Co., re-elected.

John N. Cadby, Madison, executive secretary of the association, re-elected.

Staten Island Company Adds to Equipment

The New York & Richmond Gas Company, of Staten Island, N. Y., has closed a contract with the Gas Machinery Company, of Cleveland, O., for a new eleven-foot double superheater carburetted water gas apparatus complete with overhead operating floor, motor driven blower, generator charging equipment, air and steam meters, pyrometer and provision for future waste heat boiler.

The contract also includes a water gas condenser, P. & A. tar extractor and 36 inch and 20 inch yard piping to connect the above.

The gas company will install new 36 inch and 24 inch connections in one of their present holders, which will be used as a relief holder, and the above improvements will increase the generating capacity to take care of the increasing sendout of the gas company and enable it to continue giving the excellent service it has always furnished in the past.

ASSOCIATED GAS & ELECTRIC COMPANY
Statement of Earnings and Expenses

	1923	1922	Inc.	Dec.
MONTH OF JANUARY				
Gross Earnings	$275,927	$153,370	$122,557	—
Operating Expenses and Taxes	171,364	87,123	84,241	—
Net Earnings	104,563	66,247	38,316	—
Less: Renewals and Contingencies Reserve	10,135	7,263	2,872	—
Gross Income	94,428	58,984	35,444	—
Fixed Charges	45,218	24,735	20,483	—
Net Income	49,210	34,249	14,961	—
TWELVE MONTHS ENDED JANUARY 31ST.				
Gross Earnings	2,559,217	1,651,944	907,273	—
Operating Expenses and Taxes	1,706,603	1,098,241	608,362	—
Net Earnings	852,614	553,703	298,911	—
Less: Renewals and Contingencies Reserve	113,483	83,212	30,271	—
Gross Income	739,131	470,491	268,640	—
Fixed Charges	431,248	253,116	178,132	—
Net Income	307,883	217,375	90,508	—
	***	***	***	
Earned on Preferred Stock (per share)	$11.54	$8.14	$3.40	—
Required on Preferred Stock (per share)	3.50			
Dividend Earned (times)	3.29X			

Gas Company Helps Out in an Emergency

During a recent cold snap at Gloucester, Mass., the Gloucester Gas Light Company was called on to help out in an emergency. The boiler in the Masonic Building burst, leaving the entire building with no means of heat. In this building are the large stores of the F. W. Woolworth Co., Talbot & Co. and the Army & Navy store, besides fifteen offices and the Masonic apartments. This happened on a Sunday morning, with the thermometer at zero. The manager of the building got in touch with Manager Coffin of the gas company at his home and inquired if he could help them out, as it would be two weeks before they could get a new boiler installed. This meant that unless they could find some means of heating this building, all the tenants would have to close their stores and offices until the repairs were made.

Mr. Coffin immediately rounded up an emergency crew of his men and to work they started. The building is electrically lighted, but some of the gas outlets had been left in. Temporary piping was installed throughout the stores, halls and offices and 35 Radiantfires were connected up, and by eight o'clock that night the entire building was heated and as cosy as could be. In no part of the building was the temperature below 60 degrees, and in some of the stores some of the heaters were turned out for the night, as the stores were getting too warm.

With these heaters going day and part of the night, the stores and offices were able to keep open for business. One can imagine the proposition put up to the gas company when it is considered that the F. W. Woolworth Co. store has a floor space of 100 feet by 200 feet and 18 feet high. There 15 heaters did the trick, so that the 25 employees and the customers were comfortable at all times. Manager Morton of the Woolworth is high in his praise of the service that the gas company rendered, as is also Manager Phillips of the Talbot Company.

This little bit of good service with good will is a big boost for a gas company, also quite an ad for the company's product, because many customers saw the Radiantfires in actual use and saw what they could do.

Leominster Wins

The bowling team of the Leominster Gas Light Company held a match with the Clinton Gas Light Company's bowling team in Leominster recently and the Leominster team won by a margin of 120 pins. After the match refreshments were served at the clubrooms on Mechanic street. George Small, with a high score of 295 pins, was presented with a beautiful Radiantfire heater with the compliments of Mr. Fisher, representative of the General Gas Light Company, who was present at the match. The following week the Leominster team met the Leominster Fire Department bowling team in an eight man match, which gave the firefighters a victory by the slight margin of seventeen pins.

Gasman Becomes Postmaster

The Spencer Gas Company will lose one of its employees April 1, through the appointment of Harry S. Tripp as postmaster of Spencer. Mr. Tripp is not a new hand in the government service, having served Spencer for many years as postmaster before entering the employ of the gas company.

Demonstration Follows Dinner to Gas Employees

Twenty-five employees of the Chuctanunda Gas Light Company enjoyed dinner at the Barnes Hotel, Amsterdam, N. Y., Monday evening, March 19, as the guests of Frank D. Wharton, district manager of the Ruud Manufacturing Company, of Pittsburgh, Pa. Those present were members of the office force, the sales department and the distribution department.

After dinner all went to the offices of the company on Market street, where Charles L. Baker, sales engineer of the Ruud Manufacturing Company, gave a talk and demonstrated the automatic gas water heater made by his company. Mr. Baker is now making a trip in the interest of the company.

Year Book of American Engineering Standards Committee Off Press

The 1923 Year Book of the A. E. S. C., which has just come off the press, shows that considerable progress was made during the last year in standardization projects affecting the gas industry. Of the thirty-five standards thus far approved by the A. E. S. C., the following are of special interest to this industry:

Method of Sampling of Coal; Illuminating Engineering Nomenclature and Photometric Standards; Safety Code for the Protection of the Heads and Eyes of Industrial Workers; Methods of Laboratory Sampling and Analysis of Coke; National Electrical Code; Pipe Thread; Code of Lighting Factories, Mills and Other Work Places; Specifications for Fire Tests of Materials and Construction.

The report shows that at the end of the year 121 industrial standardization projects were definitely under way or had been completed and the standards approved. Two hundred and seventy-five national technical, industrial and governmental bodies—including the American Gas Association—are co-operating in the work of the A. E. S. C. through officially accredited representatives, and more than 900 individuals are serving on the sectional committees which carry on the actual standardization work.

One of the most important accomplishments of the year was the development of a plan of co-operation between the Federal Specifications Board—the body which develops the specifications for all government purchases—and the A. E. S. C., by which the specifications of the board are submitted informally to the A. E. S. C. before definite adoption. By this plan the Government received the criticisms of industry through the organizations which speak for those branches of industry that are concerned with any particular standard. Dr. A. S. McAllister, who has been serving as special liaison officer of the Bureau of Standards, has been designated by the Chairman of the Federal Specifications Board as liaison representative in the co-operative work with the A. E. S. C.

Other projects of interest to the gas industry which have official status before the American Engineering Standards Committee are:

Safety Code for Floor and Wall Openings, Railings and Toe Boards.

Identification of Piping Systems.

Safety Code for Ladders.

Specifications for Cast Iron Pipe and Special Castings.

Screw Threads.

Pipe Flanges and Fittings.

Specifications for Welded and Seamless Steel Pipe.

Specifications for Welded Wrought Iron Pipe.

Gas Safety Code.

Safety Code for Industrial Sanitation.

Ventilation Safety Code.

Safety Code for Exhaust Systems.

Engineering Abbreviations and Symbols.

Atlanta Gas Salesmen Organize "Flying Squadron Club"

Atlanta, Ga.—Members of the sales department of the Georgia Railway & Power Company, this city, believing that a good volume of business can be increased to an even greater volume through organization, have started the "Flying Squadron Club."

The object of the club is to promote general interest and a spirit of good fellowship between gas and electric appliance salesmen.

The members feel that this step will, to a very great extent, improve their efficiency, due to the fact that they have received a number of hearty endorsements from several of the leading manufacturers of gas and electric appliances, which have been followed by a few endowments, the first of which was the gift of a 477 R. E. Roper range from the Geo. D. Roper Corp'n, Rockford, Ill., upon the recommendation of their representative, Mr. W. C. Quinn.

L. G. Fields was elected president to serve through the year 1923. Other officers elected were John M. Stone, vice-president; Miss Annarene Walters, secretary-treasurer, and Le Roy R. Garberg, publicity correspondent.

The officers and members hope to hear of the organization of similar clubs among the various other gas and electric companies, and will be glad to communicate with them in regard to same, entertaining hopes of the future organization of a nationwide organization.

Can Render Bills Immediately

The Public Service Commission of the State of Georgia has just granted permission to the Georgia Railway & Power Company, of Atlanta, to render gas and electric meter bills as soon as they are read, instead of holding them until the 1st of the month.

President Arkwright, of the Georgia Railway and Power Company, was the principal speaker in behalf of the new system. He showed that a total of 68,767 gas and electric customers were served by his company each month and that holding back the bills until the 1st of the month caused tremendous congestion in the clerical work of the company.

Under the new system, which is known as the "continuous billing system," bills will be sent to consumers as fast as their meters are read, and a ten-day discount will be allowed after the receipt of the bill.

Gas Company to Be Incorporated

Thomaston, Conn.—The Senate committee on incorporations has reported favorably on Senate bill No. 513, incorporating the Thomaston Gas Company. The question of gas for Thomaston was first brought up a few years ago at a meeting of the Thomaston Business Men's Association, and a committee was appointed to look into the matter. It was at first thought that gas could be piped here from Waterbury or Bristol, but the committee reported at a later meeting that this plan was not feasible.

Many Order Automatic Controls.

Orders for its Automatic Controls continue to be received by The U. G. I. Contracting Company, of Philadelphia. Since the advent of 1923, orders for these controls have been placed by the Consumers Gas Company, of Reading, Pa., (3 controls), Atlantic City (N. J.) Gas Company and the Nassau & Suffolk Lighting Company for its plant at Hempstead, Long Island.

Steam and Stoker Engineers to Hold Convention in Philadelphia

During the week of April 9th there will be a convention of steam and stoker engineers at the South Philadelphia Works of the Westinghouse Company. The meeting will bring together engineers from all sections of the country. Those already scheduled to arrive are: W. N. Klingman and A. W. Cummings, of Boston; J. V. Cranston and W. J. Rheinfrank, of Chicago; F. R. Gray and C. W. Tupper, of New York; C. J. Parker and J. E. Larabee, of Cincinnati; S. E. Ward, of Atlanta; G. W. McCormick and C. R. Burlingame, of St. Louis; John Atkinson and C. A. Woodruff, of Buffalo; B. A. Middleton, of Detroit; H. R. Lazarus and M. E. Yeager, of Pittsburgh; M. M. Hiltebeitel and E. K. Mosier. of Philadelphia.

The Philadelphia Westinghouse Works is the second largest of the 21 factories and is completely new and modern. It is located on a site of 500 acres of land. The list of products include: Steam turbines, condensers, steam engines, stokers, reduction gears, air pumps, condensate pumps, circulating pumps, gas engines, refrigerating apparatus and gyroscopes. There are more than 3,500 people employed in the works. There the raw manufacturing materials from two railway systems enter one end of the plant and progress through the foundry, forge shop, machine shop, erecting plant, inspection department and testing departments to the shipping department. A modern power house provides steam and electricity, while a large modern office building houses the directing forces. Special attention is given to safety, sanitation and welfare work, and a community consisting of 200 well-built modern homes is located on the company's property near an athletic field.

Gas Co. Has Attractive Show

Scranton, Pa.—The place and the necessity of gas in the modern home was never better demonstrated than it is being demonstrated this week at the Scranton Home Beautiful Show by the Hyde Park Gas Company. In its characteristically big way, the gas company has fitted up a space along the south wall of the Armory with gas appliances in operation and the booth is a spot of extreme interest to every housewife and to every husband who wants to help make the home more attractive and to cut down the drudgery of housework.

One of the appliances on display is the Stuart Otto iceless refrigerator that is manufactured in Scranton and that operates with either gas or electricity. It is a compact, handsome machine, and its refrigerating qualities show on the thermometer and in the cakes of ice that are being frozen in little pans inside the box.

The Ruud storage water heater is another appliance that is attracting a great deal of attention because of its efficiency and extremely low cost of operation. This heater has solved the hot water problem in thousands of households. The garbage incinerator is another gas appliance that meets a real home need.

There are several Vulcan smooth top ranges and a handsome Clark-Jewel range with a Lorain Oven Regulator. The popular Radiantfires are in display, their prices ranging from $15 to $200. Another piece that is interesting many as the spring approaches and the expense of keeping the house heating plant going all day is unjustified, is a gas radiator, simple and easy to operate and a real fuel saver. This radiator is finding a big sale for garages as well as homes.

Joseph Bees, manager of the gas appliance department for the gas company, is in charge of the exhibit at the show and is being assisted by Philip Henry, John Frank and Chester Chase, salesmen.

Milwaukee Co. Installing Automatic Controls

The Milwaukee Gas Light Company of Milwaukee, Wisc., has placed order with the Gas Machinery Company of Cleveland for four automatic water gas controls to be installed on the 11 ft. water gas sets at the Third Ward Works in Milwaukee.

Two of the 11 ft. water gas sets are already equipped with these automatic controls and the installation of the four additional controls recently ordered will enable the gas company to operate all six of its 11 ft. sets at this Station automatically on shorter blow and run periods, thereby having all of the various operations take place at the exact moment desired, which is impossible with hand operation with the operator depending on a clock or other similar timing device for his hand operations.

The automatic controls will also reduce the wear and tear on the refractories and the efficiency of the apparatus will also be greatly increased due to the more even heats made possible by short cycles with automatic controls.

Appoints Representative in Japan

Mitsui & Company have just been appointed exclusive representatives in Japan and China for Uehling CO_2 Recording Equipment and other Uehling power plant instruments and gauges. The head office of Mitsui & Company is located in Tokio, and their New York branch office is at 65 Broadway.

Gas System at Old Orchard Is Meeting Topic

Old Orchard, Me.—The installing of the gas service at this resort was the principal business considered at the weekly meeting of the Old Orchard Board of Trade at Staples Inn. There were about 25 members and guests present. Dr. A. Leon Jones, president of the board, presided. After supper had been served, John G. Murray, of Biddeford, superintendent of the gas department of the York County Power Company, told the members what the approximate cost would be to lay 40 miles of gas mains, which it was thought would be needed here. He said that while it would be impossible to give any positive information in regard to the cost, it would probably be about $8,000 a mile and the total approximate cost of installing would be about $500,000.

Frank R. Fowles, of Portland, an official of the Cumberland County Power & Light Co., and Ralph W. Hawkes, of Biddeford, connected with the York County Power Company, both gave addresses on the gas question.

It is not known whether it will be possible to secure sufficient subscribers for the gas service to warrant the installing of the system at this time.

May Organize Gas Company

Jamestown, N. Y.—Tentative plans for the organization of a gas company to acquire the franchise and local property of the Pennsylvania Gas Company and to build an artificial gas plant that would provide an auxiliary supply were discussed at a conference of Jamestown business men. Present at the conference was Stephen T. Lockwood of Buffalo, former United States District Attorney, who represents a California corporation which manufactures gas from a low grade Mexican crude oil.

The fact that a movement is under consideration for the organization of a gas company here was made known by Walter H. Edson at the public gas conference held in the City Hall. Mr. Edson told the citizens present that he was authorized to state that if the Pennsylvania Gas Company was really ready to turn over its franchise and sell its plant in Jamestown at a reasonable price and furnish enough gas for cooking and heating water, a responsible group of local people would be willing to take over the franchise and property.

This company, Mr. Edson stated, would buy whatever gas the Pennsylvania company has to sell and purchase natural gas from such other sources as might be available, and that it would also build an artificial gas plant that would provide an auxiliary supply sufficient to provide the city of Jamestown with all the gas it needs.

On the question of rates, Mr. Edson called attention to the fact that Frank O. Anderson had not stated what rate the Pennsylvania Gas Company would ask in Jamestown in the event of a settlement, and he stated that the rate of the new company, if it was organized, would be no higher than the Pennsylvania corporation would ask.

The conference of local business men with Mr. Lockwood was arranged prior to calling of the citizens' meeting by the Mayor and it was merely a coincidence that both conferences were held on the same day. Mr. Lockwood presented the plan of his company. He said that several plants manufacturing gas from Mexican crude oil are in successful operation on for a plant was recently closed at the Pacific Coast and a contract New Bedford.

Mr. Lockwood visited Jamestown about two years ago and presented a plan for an artificial gas plant at a conference called by Mayor Carlson. He is no longer connected with the corporation he represented at that time.

Schmid Represents Uehling in New York

The Uehling Instrument Company, manufacturers of CO_2 recorders and other power plant gauges has placed Charles J. Schmid in charge of sales in Greater New York and Long Island. Mr. Schmid is well qualified for his duties in this important territory due to his close contact with power plant operators in the interest of fuel economy when formerly in charge of the Boston office. Temporarily Mr. Schmid will make the home office in Paterson, N. J., his headquarters.

Elizabeth Co. Increases Equipment

The Elizabethtown Consolidated Gas Company of Elizabeth, N. J., has awarded contract to the Gas Machinery Company of Cleveland, Ohio, for a new 11 ft. double superheater carburetted water gas apparatus complete with automatic control, overhead operating floor and auxiliary equipment.

This new 11 ft. set will be placed in the same building with the 11 ft. set furnished at Elizabeth by the Gas Machinery Company a few years ago and the contract also includes an automatic control for the old 11 ft. set so that both machines will be uniformly and automatically operated.

The contract also includes two new 10 ft. 6 in. water gas generators and auxiliary equipment for two of the gas company's old 10 ft. machines.

The Elizabethtown Consolidated Gas Company is keeping pace with its ever growing sendout of gas and by maintaining its manufacturing equipment in first class and up-to-date condition will be in shape to continue giving the efficient service to its customers that it has always furnished in the past.

Contract Awarded.

Fred. W. Freese, Chicago, Ill., has been awarded the contract for a 5,000 cu. ft. capacity Gas Holder to be erected at Scott Field, Illinois, for the Burdett Manufacturing Co.

Sues to Protect Street Main

The question as to whether a thousand pound hammer, dropped a distance of ten feet, and striking an asphalt pavement, would damage a gas main four and a half feet below the surface, has been in the court in Kansas City, Mo., for the past two weeks. While it has not been settled, the gas company has secured a restraining order preventing the contractor from dropping his hammer within four feet of where the company's pipes are located. J. E. Welsh, paving contractor, has a contract to repave Prospect Avenue from Nineteenth to Thirty-first Street, and has been using a trip hammer to break up the asphalt pavement which is on the avenue. The company feared the dropping of the hammer might tend to break the gas pipes, so it sought from Judge Dew a restraining order to prevent him from using it in his work. The company had its representative measure Welsh's hammer, and they reported that it weighed 2,100 pounds. The company's engineers estimated that the fall of this hammer ten feet would hit the pavement with the force of 120 tons.

The contractor replied that the company had measured the wrong hammer, and the one he was using weighed only a thousand pounds. When the case dragged, he offered to bet a thousand dollars that his hammer would not break the shell of an egg, if it was placed under the pavement and four and a half feet below the surface. He did not get any takers. The final order of the court was to the effect that Welsh should not drop his hammer closer than four feet of the company's pipes, and that the company should put up a $6,000 bond to cover any possible losses the contractor might suffer as a result of the injunction.

Tampa Gas Co. Putting in Water Gas Apparatus

The Tampa (Fla.) Gas Company has just awarded to the U. G. I. Contracting Company, of Philadelphia, contract for a 9-foot cone top U. G. I. carburetted water gas apparatus. This apparatus will have all the modern improvements installed upon it and will increase the plant capacity by over 2,000,000 cubic feet per day.